

REMARKS

CLAIM OBJECTIONS

Claims 4, 15, 27 and 38 are objected to based on stated informalities. These claims are herein amended to correct the typographical error, and the Applicants thank the Examiner for his detailed review and comments.

35 USC §102

Claims 1-3, 5, 7-10, 12-14, 17-20 and 22 are rejected under 35 USC §102(b) as being anticipated by Enomoto.

Claims 1-5, 7-10, 12-15, 17-20, 22-28 and 30-33 are rejected under 35 USC §102(b) as being anticipated by Demaray.

Claims 1-3, 5-7, 11-14, 16 and 21-22 are rejected under 35 USC §102(b) as being anticipated by Nagashima.

The Applicant disagrees, especially in view of the amendments presented herein, which are supported by page 16 of the current application.

Amended claim 1 recites:

"A sputtering target, comprising:

a target surface component comprising a target material;

a core backing component having a coupling surface and a back surface, wherein
the coupling surface is coupled to the target surface component; and

at least one surface area feature coupled to or located in the back surface of the
core backing component, wherein the surface area feature increases the
effective surface area of the core backing component, and wherein all of the
effective surface area of the core backing component is in contact with
cooling fluid."

Amended claim 12 recites:

"A sputtering target, comprising:

a target surface component comprising a target material;

a core backing component having a coupling surface and a back surface, wherein the coupling surface is coupled to the target surface component; and

at least one surface area feature coupled to or located in the back surface of the core backing component, wherein the surface area feature comprises a subtractive feature, an additive feature or a combination thereof, wherein the surface area feature increases the effective surface area of the core backing component, and wherein all of the effective surface area of the core backing component is in contact with cooling fluid."

Amended claims 22-24 recite:

22. A method of forming a sputtering target, comprising:
- providing a target surface component comprising a surface material;
- providing a core backing component comprising a backing material and having a coupling surface and a back surface;
- providing at least one surface area feature coupled to or located in the back surface of the core backing component, wherein the surface area feature increases the effective surface area of the core backing component, and wherein all of the effective surface area of the core backing component is in contact with cooling fluid; and
- coupling the surface target component to the coupling surface of the core backing component.
23. A method of forming a sputtering target, comprising:
- providing a target surface component comprising a surface material;

- providing a core backing component comprising a backing material and having a coupling surface and a back surface;
- providing at least one surface area feature coupled to or located in the coupling surface of the core backing component, wherein the surface area feature increases the effective surface area of the core backing component, and wherein all of the effective surface area of the core backing component is in contact with cooling fluid; and
- coupling the surface target component to the coupling surface of the core backing component.
24. A sputtering target, comprising:
- an integrated target surface component and core backing component, wherein the surface component and the backing component comprise the same target material; and
- at least one surface area feature that is on or integrated into the core backing component, wherein the surface area feature increases the effective component of the core backing component, and wherein all of the effective surface area of the core backing component is in contact with cooling fluid."

All of these independent claims contain the provision wherein all of the effective surface area of the core backing component is in contact with cooling fluid. This provision, and therefore these independent claims as a whole, is not anticipated by the cited references. For example, the Enomoto reference embeds a closed network of cooling tubes in the target assembly, whereby the cooling fluid is contained entirely within the channels. The Demaray reference teaches a cooling cover plate that fits on to the back of the target assembly that forms closed channels of cooling fluid. In this particular reference, there is no surface area feature that is on or integrated into the core backing component, wherein the surface area feature increases the effective component of the core backing component, and there is no embodiment where all of the effective surface area of the core

backing component is in contact with cooling fluid.

With respect to Nagashima, the entire back surface of the core backing component of the present target assembly is in contact with cooling fluid, whereas only the channels of the target backing plate/cooling plate are in contact with cooling fluid in Nagashima. This feature of the target assembly of Nagashima does not maximize the cooling efficiency of the device.

None of Enomoto, Demaray or Nagashima disclose the above-referenced independent claims that recite the present subject matter. "Anticipation requires the disclosure in a single prior art reference of each element of the claim under consideration." *W. L. Gore & Assocs. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303, 313 (Fed. Cir. 1983) (citing *Soundsciber Corp. v. United States*, 360 F.2d 954, 148 USPQ 298, 301 (Ct. Cl.), *adopted*, 149 USPQ 640 (Ct. Cl. 1966)) Further, the prior art reference must disclose each element of the claimed invention "arranged as in the claim". *Lindermann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984)(citing *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983)). None of these references disclose the provision wherein all of the effective surface area of the core backing component is in contact with cooling fluid. Based on this argument, along with others such as that discussed above, none of Enomoto, Demaray or Nagashima anticipate claims 1, 12, 22, 23 or 24 of the present application because Enomoto, Demaray and/or Nagashima are lacking and/or missing at least one specific feature or structural recitation found in the present application, and in claims 1, 12, 22, 23 or 24. Claim 1, 12, 22, 23 or 24 is therefore allowable as not being anticipated by Enomoto, Demaray and/or Nagashima. Further, Enomoto, Demaray and/or Nagashima do not anticipate claims 2-11, 13-21 and 25-34 of the present application by virtue of their dependency on claims 1, 12, 22, 23 or 24.

35 USC §103

Claims 29 and 34 are rejected under 35 USC §103(a) as being unpatentable over Demaray in view of Nagashima.

Claims 35-37, 39-40 and 45 are rejected under 35 USC §103(a) as being unpatentable over Nagashima in view of Mishima.

Claims 35-39 and 41-44 are rejected under 35 USC §103(a) as being unpatentable over Demaray in view of Mishima.

The Applicant disagrees, especially in view of the amendments presented herein.

Amended claim 24 recites:

"A sputtering target, comprising:

an integrated target surface component and core backing component, wherein the surface component and the backing component comprise the same target material; and

at least one surface area feature that is on or integrated into the core backing component, wherein the surface area feature increases the effective component of the core backing component, and wherein all of the effective surface area of the core backing component is in contact with cooling fluid."

Amended claim 35 recites:

"A sputtering target, comprising:

an integrated target surface component and core backing component, wherein the sputtering target comprises a target material gradient; and

at least one surface area feature that is located on or integrated into the core backing component, wherein the surface area feature increases the effective component of the core backing component, and wherein all of the effective surface area of the core backing component is in contact with cooling fluid."

Each of these independent claims contain the provision wherein all of the effective surface area of the core backing component is in contact with cooling fluid. This provision, and therefore these independent claims as a whole, is not obvious in view of the cited references, alone or in combination. The Demaray reference teaches a cooling cover plate that fits on to the back of the target assembly that forms closed channels of cooling fluid. In this particular reference, there is no surface area feature that is on or integrated into the core backing component, wherein the surface area feature increases the effective component of the core backing component, and there is no embodiment where all of the effective surface area of the core backing component is in contact with cooling fluid.

With respect to Nagashima, the entire back surface of the core backing component of the present target assembly is in contact with cooling fluid, whereas only the channels of the target backing plate/cooling plate are in contact with cooling fluid in Nagashima. This feature of the target assembly of Nagashima does not maximize the cooling efficiency of the device.

The Mishima reference does not cure the deficiencies of the Demaray or the Nagashima references, because it also does not teach, disclose or suggest to one of

ordinary skill in the art that the effective surface area of the core backing component is in contact with cooling fluid.

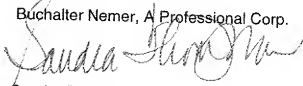
Therefore, claims 24 and 35 are allowable as patentable over Demaray, Nagashima and Mishima -- alone or in combination. In addition, claims 25-34 and 36-45 are allowable by virtue of their dependence on claims 24 and 35, respectively.

REQUEST FOR ALLOWANCE

Claims 1-45 are pending in this application, and the Applicant respectfully requests that the Examiner reconsider the claims in light of the arguments presented and allow all pending claims.

Respectfully submitted,

Buchalter Nemer, A Professional Corp.



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